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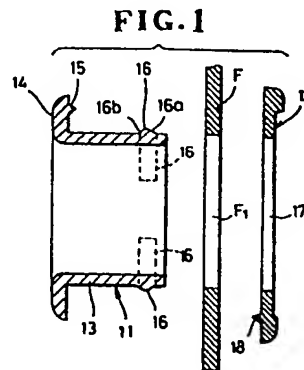
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(84) Grommet.

(57) A grommet (10) for use with sheet material (F) comprises an eyelet part (11) and a washer part (12) to be coupled therewith. A means (18) integral with either of these parts is provided for retaining both parts (11) and (12) in engagement temporarily until they are finally assembled into a grommet (10).



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GROMMET

This invention relates to improvements in and relating to a grommet made of a resilient material which is to be set in sheet material such as a garment fabric.

5 There are known a variety of grommets made of metal or plastics to be set in sheet material such as of textile articles. The grommet usually comprises an eyelet to be pierced through the sheet material and a washer to be coupled with the eyelet, in which instance
10 the eyelet is curled or otherwise deformed so as to fit securely over the washer. Prior to this coupling or clamping operation, the washer is often liable to get loose and fall apart from the eyelet, requiring the user to hold these parts together all way until the
15 moment they are clamped into place by a tool.

According to the invention, there is provided a grommet which comprises: an eyelet made of a resilient material and including a cylindrical barrel with one end open, an annular flange extending around the other
20 end of said barrel; a washer made of a resilient

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material and including a circular plate having a central bore which has a diameter nearly equal to the outside diameter of said barrel; and a means for retaining said eyelet in engagement with said washer temporarily until
5 they are assembled into a grommet.

It is an object of the invention to provide an improved grommet which comprises an eyelet part, a washer part, both of which are to be coupled together with a sheet material interposed therebetween, and a
10 means for retaining the eyelet and the washer in engagement temporarily until they are finally assembled in the form of a grommet.

The features and advantages of the present invention will be better understood from the following description taken in conjunction with the accompanying
15 drawings in which preferred structural embodiments incorporating the principles of the invention are shown by way of example.

Figure 1 is an exploded, cross-sectional view of
20 a grommet embodying the invention, with an eyelet, a sheet of fabric and a washer arranged in this order;

Figure 1A is a cross-sectional view of a modified form of the eyelet;

Figure 2 is a cross-sectional view of the grommet
25 of Figure 1 which has been assembled and set in the fabric;

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Figure 3 is a view similar to Figure 1 but showing a modified form of grommet embodying the invention;

Figure 4 is a cross-sectional view of the grommet of Figure 3 which has been assembled and set in the
5 fabric;

Figure 5 is a plan view of the eyelet taken along the arrowed lines V-V of Figure 3; and

Figure 6 is a plan view of the washer taken along the arrowed lines VI-VI of Figure 3.

10 Referring now to Figure 1, there is shown a preferred form of grommet 10 which is made up from an eyelet part 11 and a washer part 12, both parts being made of a resilient, deformable material such as plastics, rubber and the like. The eyelet 11 includes a
15 cylindrical barrel 13 with one end open and an annular flange 14 extending around the other end or bottom of the barrel 13. The annular flange 14 has a tapered prong 15 for biting engagement with a sheet of fabric F.

According to an important feature of the present
20 invention, there is provided a retaining means 16 for preventing the washer part 12 from falling off from the eyelet part 11 once both parts have been brought into engagement.

The retaining means 16 is embodied in the form
25 of a plurality of discrete projections projecting radially outwardly from the barrel 13 and arranged around thereof. Each projection 16 has a first surface

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16a obtusely slanting toward the flange 14 and a second surface 16b acutely slanting toward the open end of the barrel 13 or in a direction opposite to the flange 14. Alternatively, the retaining means may be in the form of an integral annular projection 16' (Figure 1A) of the same cross section as that of the discrete projections of Figure 1.

The washer part 12 is in the form of a circular plate having a central bore 17 which has a diameter nearly equal to the outside diameter of the cylindrical barrel 14 and slightly smaller than an outside diameter defined by the projections 16. A prong 18 similar to the prong 15 extends from the bottom of the washer 12 and similarly functions to anchor the fabric F against movement.

Now, when assembling the eyelet 11 and the washer 12 together, the eyelet 11 is first inserted with its barrel 13 through an opening F₁ in the fabric F and then through the bore 17 of the washer 12, when the washer 12 undergoes elastic deformation as the peripheral wall of the bore 17 rides over and past the projections 16. The washer 12 can thus be retained in engagement with the eyelet 11 between the fabric F and the projections 16 until the two grommet parts are assembled in the well known manner as illustrated in Figure 2.

Referring to Figures 3-6 inclusive, there is shown a modified form of grommet which is identical in

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construction with the above described grommet 10 except for the details of a retaining means embodying the invention and except that there are provided a plurality of prongs 15 and 18 on the eyelet 11 and the washer 12, respectively, and that an annular recess 21 is formed in and around the outer periphery of the barrel 13 of the eyelet 11 at the open end thereof to facilitate the insertion of the eyelet 11 through the fabric F as well as the washer 12. The modified form of retaining means comprises a plurality of radial projections 19 extending radially inwardly from the peripheral edge of the bore 17 in the washer 12 and each having a tapered surface 20 directed toward the eyelet 11. The diameter defined by the radial projections 19 is slightly smaller than the outside diameter of the barrel 13, so that when the eyelet 11 is inserted through the bore 17 of the washer 12, the radial projections 19 are flared up in contact with the outer wall of the barrel 13 in a direction in which the eyelet 11 is inserted and lock the washer 12 against backward movement, thus preventing accidental separation of the washer 12 from the eyelet 11. Because of the structural features of the radial projections 20, the eyelet 11 and the washer 12 upon being assembled as shown in Figure 4 can be retained in position against relative movement, thus ensuring firm setting of the grommet 10 in the fabric F.

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CLAIMS:

1. A grommet (10) which comprises:
 - (a) an eyelet (11) made of a resilient material and including a cylindrical barrel (13) with one end open, an annular flange (14) extending around the other end of said barrel (13);
 - (b) a washer (12) made of a resilient material and including a circular plate having a central bore (17) which has a diameter nearly equal to the outside diameter of said barrel (13); and
 - (c) a means (16) for retaining said eyelet (11) in engagement with said washer (12) temporarily until they are assembled into a grommet (10).
2. A grommet (10) as claimed in claim 1 wherein said means (16) is a plurality of discrete projections projecting radially outwardly from said barrel (13) and arranged therearound in series, each projection having a first surface (16a) obtusely slanting toward said flange (14) and a second surface (16b) acutely slanting toward the open end of said barrel (13), the diameter defined by said projections being slightly larger than the diameter of said bore (17).
3. A grommet (10) as claimed in claim 1 wherein said means is an integral annular projection (16') projecting radially outwardly from said barrel (13) and

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extending therearound and having a first surface (16a) obtusely slanting toward said flange (14) and a second surface (16b) acutely slanting toward the open end of said barrel (13), the outside diameter of said annular
5 projection (16') being slightly larger than the diameter of said bore (17).

4. A grommet (10) as claimed in claim 1 wherein said means (16) is a plurality of radial projections (19) extending radially inwardly from the peripheral
10 edge of said bore (17) in said washer (12) and having a tapered surface (20) directed toward said eyelet (11), the diameter defined by said radial projections (19) being slightly smaller than the outside diameter of said barrel (13).

15 5. A grommet (10) as claimed in claim 1 wherein said barrel (13) is provided at its open end with an annular recess (21).

6. A grommet (10) as claimed in claim 1 wherein said eyelet (11) further includes at least one tapered
20 prong (15) projecting from said annular flange (14), and wherein said washer (12) has at least one tapered prong (18) projecting therefrom.

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FIG. 1

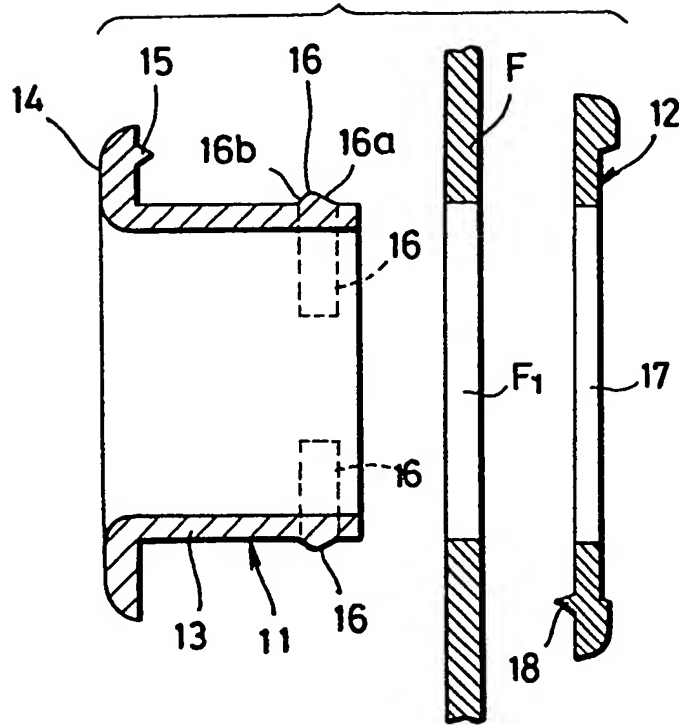


FIG. 1A

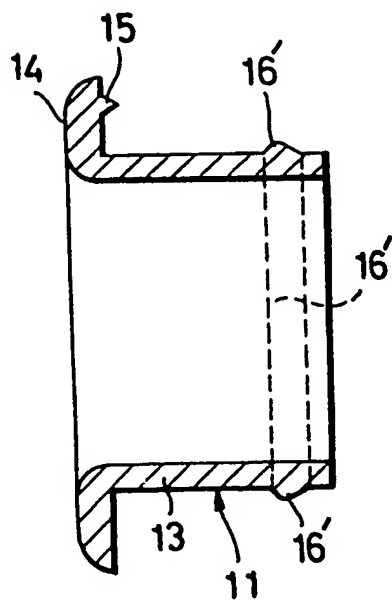
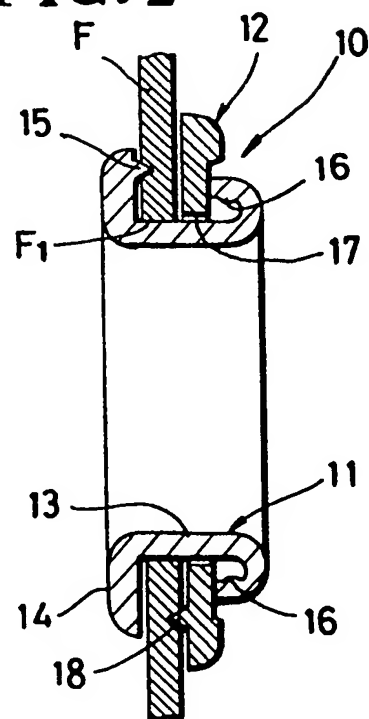
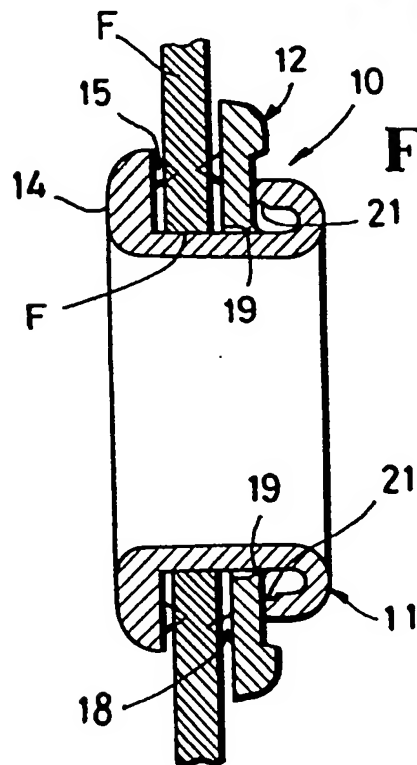
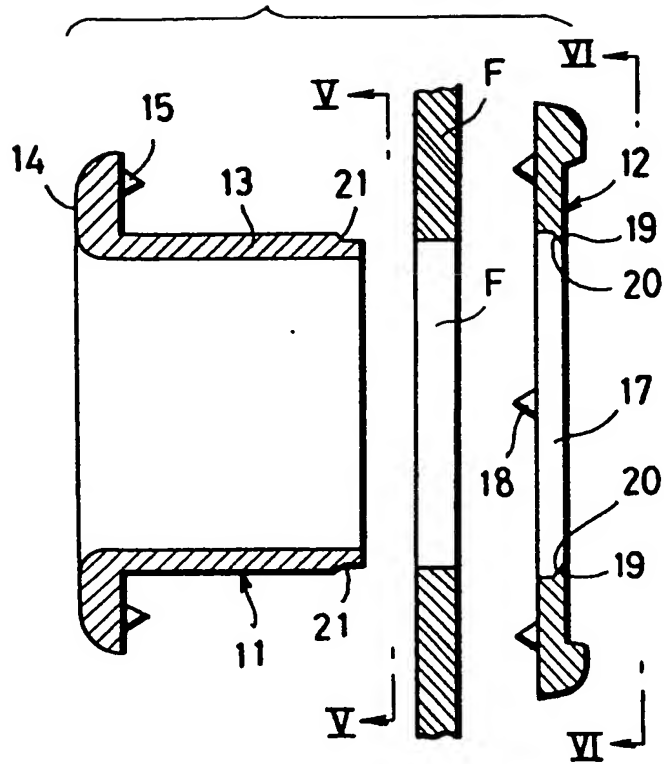


FIG. 2



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FIG. 3**FIG. 4**

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FIG. 5

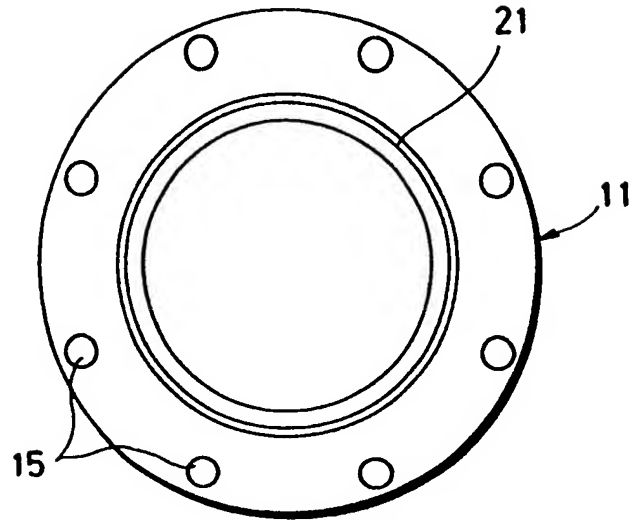
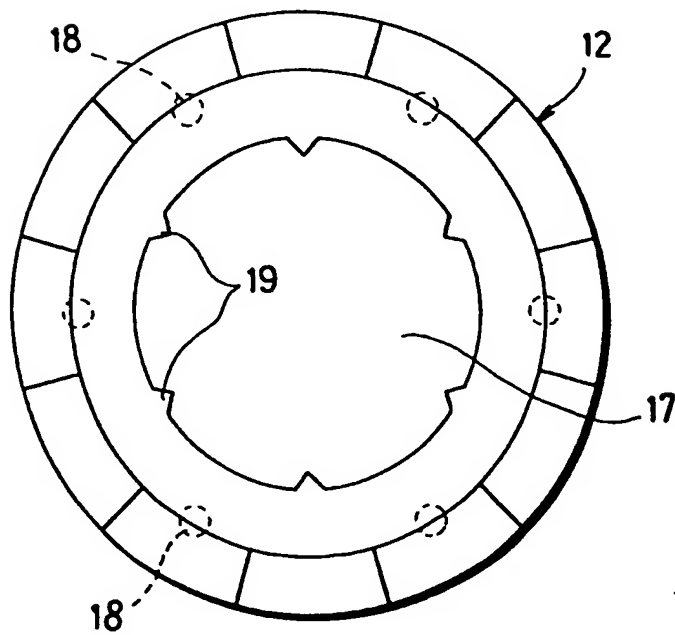


FIG. 6





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EUROPEAN SEARCH REPORT

0080697

Application number

EP 82 11 0872

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 7)
X	<p>---</p> <p>DE-U-7 013 013 (K.HINZ)</p> <p>*The whole document*</p>	1	A 44 B 13/00
A	<p>---</p> <p>DE-A-1 900 465 (P.NAWRATH)</p> <p>*Page 4, last paragraph; page 5, entirely; figures 1-4*</p>	1,6	
A	<p>---</p> <p>DE-U-7 532 185 (BMP POLSTERMÖBELWERK ROLF BENZ)</p> <p>*Claims 1,2,4,5,7,8; figures*</p>	1,3	
A	<p>---</p> <p>DE-A-1 610 352 (E.MAIER)</p> <p>*Page 3, last paragraph; page 3, entirely; claims; figures*</p>	1,2,4	
A	<p>---</p> <p>FR-A-2 476 992 (YOSHIDA KOGYO)</p> <p>*Claims; figures*</p>	1,4	<p>TECHNICAL FIELDS SEARCHED (Int. Cl. 7)</p>
A	<p>---</p> <p>US-A-1 334 163 (F.G.NEUBERTH)</p>		<p>A 44 B</p> <p>A 43 C</p> <p>A 41 H</p>
A	<p>---</p> <p>BE-A- 508 702 (USINE UNION)</p>		
A	<p>---</p> <p>AU-A- 428 493 (H.E.POWELL)</p> <p>-----</p>		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18-02-1983	Examiner GARNIER F.M.A.C.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone</p> <p>Y : particularly relevant if combined with another document of the same category</p> <p>A : technological background</p> <p>O : non-written disclosure</p> <p>P : intermediate document</p> <p>T : theory or principle underlying the invention</p> <p>E : earlier patent document, but published on, or after the filing date</p> <p>D : document cited in the application</p> <p>L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			